Appendix F

Solid Minerals

Introduction

This appendix is intended to aid in understanding the federal solid mineral management process as it applies to the planning area. In addition, the methodologies used to evaluate resource potential are explained, typical mining practices are discussed, and reasonably foreseeable development and proposed constraints on mining activity are presented.

Based on the laws which authorize exploration and development of federal minerals, minerals are classified as "leasable", "locatable", and "salable" as defined below.

Leasable minerals are those federal mineral rights available for disposal and development under the authority of the Mineral Leasing Act of 1920, as amended. Included are federal minerals on acquired lands as provided by the Mineral Leasing Act for Acquired Lands of 1947, as amended. Solid leasable minerals include coal and phosphate.

Locatable minerals are those federal minerals available for disposal and development under the authority of the Mining Law of 1872, (as amended). Included are minerals on public domain such as the metallic minerals (e.g., gold and silver) and other minerals of special value on public domain (e.g., some clays and high quality limestone).

Salable minerals are those federal minerals available for disposal and development under the authority of the Material Sale Act of 1947, as amended. Included are common sand, stone, gravel, and clay.

Early in the planning process, as part of developing planning criteria (See Chapter 1), it was decided to base decisions pertaining to management of locatable, solid leasable, and salable minerals on analysis of minerals with known development potential on FMO. At the outset these minerals included phosphate, limestone, heavy mineral sands (titanium), sand, gravel, and clay. Based on further evaluation, however, it was concluded that only phosphate and limestone (as a salable mineral) have development potential on FMO. Proposals for development will be considered on a case-by-case basis with appropriate NEPA documentation.

Phosphate

Standard Management of Phosphate Leasing

Federal regulations for leasing and development of phosphate are found at 43 CFR 3510 with additional guidance in the BLM 3510 Manual. The legal instruments issued under these regulations and used for exploration and development include prospecting permits, preference right leases, exploration licenses, and competitive leases. In areas not classified as valuable for phosphate, prospecting permits can be issued which, if a valuable deposit is discovered, gives the holder a preference right to a lease. A license can be issued for exploration of an unleased known deposit without any resulting right to a lease. A competitive lease can be issued for an area classified as "valuable".

Prior to issuing a lease the requirements of NEPA must be met. This normally consists of preparing an Environmental Analysis (EA) to determine if

significant environmental impacts would result, in which case an EIS must be prepared. Prior to exploration or mining activities a reclamation plan must be approved. Reclamation plans must meet the standards of BLM Manual 3041-1, Solid Mineral Reclamation Handbook.

In Florida, federal phosphate leases are typically contained within a larger area of private phosphate ownership. Since the federal interests are closely related with private phosphate operations, duplicates of submissions required by state and local rules are acceptable, to the extent that they do not conflict with and are at least as restrictive as the federal directives.

The state and local government permitting process begins with the Development of Regional Impact (DRI). The DRI details: proposed construction, mining and plant operations, and impacts from mining on the environment (Hoppe 1976: 87). Upon approval of the DRI, the mining company submits, to the Florida Department of Environmental Protection (FLDEP), a conceptual reclamation plan and dredge and fill application. Permits from the Southwest Florida Water Management District (SWFWMD), various county departments, and federal agencies are also required. Mine permitting is a lengthy and costly process. One company's mine required 42 permits from local, state, and federal regulatory agencies. It took 10 years and cost approximately $15 million (IMC 1992). Table F-1 graphically illustrates the permitting requirements.

Evaluation of Phosphate Potential

Three methods were used to determine the phosphate potential for the federal minerals in Florida:

> The high potential was based on the known "C-type" phosphate deposits map in Zellars-Williams (1978), modified slightly to reflect more recent data.
>
> The moderate potential was based on the area defining the Bone Valley Formation on the Florida geologic map by Brooks (1985).
>
> The low potential were those lands formerly classified as phosphate land by the USGS, but outside the high and moderate potential areas.

Phosphate potential considered federal reservations containing: All Minerals, Phosphate Only, and Oil, Gas, and Phosphate. "All Minerals" reservations outside of the high and moderate potential areas were considered "undetermined" as to potential for phosphate. Areas of phosphate potential are illustrated in Map 4.

Reasonably Foreseeable Phosphate Development

Under current technology, only high potential FMO phosphate reserves will be mined. Of approximately 1,891 acres of high potential FMO phosphate, approximately 1,366 acres have already been leased and 320 acres already mined. It is expected that an additional 160 acres will be leased and mined in the foreseeable future. The remaining 365 acres will not be leased in the foreseeable future.

The 160 acres of high potential lands are located in Manatee County and within the Tampa Bay Regional Planning Council District. The legal description of the acreage is as follows:

> T. 33 S., R. 21 E.
> Section 1, E1/2 of the NE1/4
> Section 12, SW1/4 of the SW1/4
>
> T. 33 S., R. 22 E.
> Section 18, NE1/4 of the NW1/4
>
> All Tallahassee Meridian

Table F-1. Phosphate Permitting Requirements 1/

	2/ Phase	Air	Socio-Economics	Hydrology	Waste Water	Ecology	Water Chemistry	Plan engineering
Monitoring								
Radiation.....	I,V	x		x			x	
Fluoride, SO_2, Particulate.....	I,V	x						x
Water Quality.....	I,V				x		x	
Clay Studies.....	I							x
Stream Flow.....	I,II,V			x		x		x
Biological, Archaeological.....	I					x		
Groundwater.....	I			x				
Photogrammetry.....	I							x
Local/County Permits								
Master Plan.....	I	x		x	x	x		x
Rezoning.....	I							
Building.....	III							x
Mining Permit.....	IV							x
Regional								
SWFWMD Water use.....	I			x				x
SWFWMD Works.....	III			x				x
DRI.....	I	x	x	x	x	x	x	x
State								
DEQ Air.....	II,V	x						x
DEQ H_2O Effluent.....	II,V				x		x	x
DEQ Dredge & Fill....	II			x		x		x
DEQ Sanitary H_2O.....	IV							
DEQ Dike Construction	I,III							x
DNR Master Reclamation Plan....	IV							x
Federal								
EPA-NPDES (EIS).....	I,II	x	x	x	x	x	x	x
COE Dredge & Fill				x		x		x
Oil Spill Prevention.	III							
Air Significant Deterioration.....	III							

COE-Corps of Engineers
EPA-Environmental Protection Agency
NPDES-Non-Point Discharge Elimination System

1/(Adapted from: Zellars & Williams, 1978, 113.)
2/Phase I Pre-DRI Approval
Phase II Post-DRI Approval
Phase III Design Engineering
Phase IV Construction
Phase V Operational

When the mining company wishes to include federal phosphate in a mine, the company must submit a lease application to the BLM.

All federal phosphate leases in the Central Florida district are competitive. However, the nearest mine to the federal phosphate is the IMC Fertilizer, Inc. Four Corners mine.

The following hypothetical mine assumptions are based on projections made from an IMC Fertilizer public relations handout (IMC 1992):

a. 7 million short tons phosphate rock produced annually
b. 700 acres of land mined each year
c. 8,500 short tons of rock/acre @ 0.45 yd^3/ton
d. Ore zone is 15 feet thick
e. Overburden is 25 feet thick
f. 40,300 yd^3 overburden and 24,200 yd^3 matrix per acre

For a 40-year mine, including a 10-year predevelopment process:

700 acres x 30 yr	21,000 acres
Mine facilities (wet rock mill, storage, maintenance, clay ponds, rail lines and roads)	2,000 acres
Total acreage for mine (18 land sections)	23,000 acres
Private	22,840 acres
Federal	160 acres
Federal share of mine	0.7 percent

Mining Procedure

The process of mining phosphate begins about 10 years before the draglines go to work. The process: (1) data acquisition, planning, and land acquisition, (2) mine permitting, and (3) land clearing, construction, and equipment purchases, are all required before mining may begin.

Often the mine is already producing prior to seeking a federal lease; this is true where the federal ownership is in isolated 40-acre tracts. Typically, every fourth quarter-quarter section (40 acres) has already been drilled. However, prior to developing a plan, the company may wish to conduct an exploration program. Rather than seek a federal exploration license, the company will probably drill on private land adjacent to the federal tract. Therefore, an exploration license application will probably not be submitted. However, as the plan develops they may wish to drill every 10 or 2.5 acres, depending on detected anomalies. This drilling will proceed as part of the mine development plan.

For the 160 acres identified for reasonably foreseeable phosphate development, all plant facilities are assumed to be in place, with no additional construction necessary. The 160 acres will be mined along with the surrounding private phosphate. Typically, one 40-acre tract will be mined every three to four years; actual mining occurs in about one to two months.

Mine development will consist of drilling, land clearing, and road construction, as necessary. Land clearing consists of removing the trees, stumps, and other vegetation and, when necessary, dewatering the land. If an access road is necessary, it will most likely be temporary and will be built on unmined land. Where possible, a slurry pipeline is built on the ground surface and within the road right-of-way.

Mining proceeds from adjacent private land onto federal phosphate by spoiling overburden into the previous cut. This cut is typically 325 feet wide, 25 feet deep, and 2,000 to 4,000 feet long. A pit, called a well, is dug on top of unmined phosphate. This well is about 100 feet long, 60 feet wide, and 10 feet deep. After removing the overburden and casting it, the dragline mines the 15 feet of matrix and casts it into the well. Using high pressure water guns, the matrix is slurried with water, passes over a grizzly (screening device), and is pumped into a pipeline for transportation to the wet rock plant. The "walking" dragline moves about 150 feet to the next cutting position. A new

well is dug and the procedure is repeated. The slurry pipeline "grows" with the mining. The pipeline will share the same access with the mine road.

The slurried matrix moves through the pipeline and, depending on pipe length, may pass through one or more line pumps. At the mill the coarse rock, fine rock, clay, and sand are separated in the washer-screen section. The rock is sent to wet rock storage. The clays are pumped to an above-ground settling pond for dewatering. The sand, containing fine phosphate particles, is sent to the flotation plant where the sand is separated and sent to storage for reclamation. The fine phosphate, called concentrate, is sent to storage.

Water used for mine and mill is in a closed loop; water used for slurrying the matrix is used in every process until it is decanted from the clay and returned to slurry new matrix. The Four Corners Mine recycles 97-98 percent of its water (IMC 1992).

The Manatee County Mining and Reclamation Ordinance requires the submission of an engineering monthly water balance estimate. The water balance must account for water input and output losses from the system. Water input comes from several sources: the phosphate matrix, wells drilled to 1,600 feet deep, rainwater, and, when necessary, surface water. Water output losses are: moisture shipped with the product, tailings and waste pebble, evaporation, seepage, and clay entrainment. Deep well water is often required in the flotation process because turbidity upsets the flotation process. Some of the water sent to the sand (20 percent) and clay (70 percent) disposal areas is lost to the system. Evaporation varies by seasonal climatic conditions (Zellars-Williams 1978: 65-68).

Decanting the water from the clay waste is a slow process. The clay waste (called slimes) is sent to the clay settling pond at about 3 percent solids and 97 percent water. The clays, montmorillinite and attapulgite, have an affinity for water. Since sand contains water on the particle surface only, a sand slurry will dewater to about 20 percent water very quickly. The phosphatic clays have, not only surface water, but interlayer water as well. According to Hoppe (1976: 88) each acre-foot of mined matrix requires 1.5 acre-foot volume for clay slime storage. This is easily seen in the following. The clay settles fairly rapidly to about 17 percent solids in one year, then slows dramatically to about 19 percent in nine years (Hoppe 1976: 88). The hypothetical mine used for this exercise produces approximately 6,800 cubic yards of dry clay per acre or about 1 million cubic yards for the 160 acres of high potential federal phosphate. The large real estate requirements for the clay settling ponds is expensive. Various methods have been used to reduce the water content of the clays, so that the clay ponds may be reclaimed and returned to other uses. One method is the mixing of sand waste with the clay-water slimes in the clay storage ponds. The sand increases the compaction of the clays and forces out the water; which is returned to the water budget. Another method allows the clay to settle in the pond, ditches are dug in the clays to facilitate dewatering, and the water is returned to the water budget.

The final step in the phosphate processing comes at the chemical plant. The chemical plant is a very large capital investment and, as such, one chemical plant will be centrally located to several wet rock mines/mills. After separating the phosphate from the clays and sands, it is still not a usable product. Phosphate in its natural form is only slightly soluble. To become a usable fertilizer, it must be treated. The treatment in use is to react ground phosphate rock with sulfuric acid to form phosphoric acid and gypsum. Uranium is found bound in the crystalline structure of the phosphate. The phosphoric acid is reacted with ammonia to form diammonium phosphate and monoammonium phosphate. Finally, the phosphoric acid is concentrated to form granulated triple super phosphate.

The sulfuric acid is made by burning molten sulfur to make sulfur dioxide then reacting with a catalyst to form sulfur trioxide. The sulfur trioxide is then reacted with water to form sulfuric acid. This is an exothermic process, generating

heat. One chemical plant has heat exchangers installed to co-generate electricity and take advantage of the formerly wasted heat.

Best Management Practices

Operations on federal minerals will comply with all federal, state, and local laws, regulations, and ordinances.

The FLPMA of 1976 mandates that mineral operations be conducted in an environmentally sound manner. FLPMA requires that "the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values."

Measures needed to mitigate environmental impacts are identified during the preparation of an EA prior to approval of mining and reclamation plans. Such measures may include relocating operations to avoid sensitive resources such as archaeological sites and significant wildlife habitats, and controlling potential sources of air and water pollution with various practices such as water sprays on haul roads and design and maintenance of adequate settling ponds. The pond must be designed to handle rainwater runoff in addition to the mine process water, and to prevent groundwater contamination. The pond dam must be permitted, and all waters leaving or on the property must meet applicable water quality standards of the FLDEP.

Mitigation of long-term impacts requires restoration and/or reclamation of mined land. Prior to exploration or mining activities a reclamation plan must be approved. Reclamation plans must meet the standards of BLM Manual 3041-1, Solid Mineral Reclamation Handbook. Reclamation of the mined land must also follow the regional plan, local plan, and be performed to the standards of the rules of the FLDNR found at Chapter 16C-16, Mandatory Phosphate Mine Reclamation.

As described by Hale (1982) there are four basic reclamation techniques in Florida phosphate: **land and lakes, sand tailings, clay settling ponds**, and **overburden fill**. The following paragraphs are paraphrased from Hale (1982: 172-176).

Prior to the development of current reclamation techniques, the land was mined with the overburden cast into the previous mined area and left. This created long narrow rows of steep overburden separated by lakes.

Land and lakes restoration now requires that the overburden be graded to lower slopes, decrease water depth in the lakes, and decrease erosion potential. If necessary, off-site overburden and sand tailings are added to achieve the desired land-lakes ratio and correct slope. Once the land and lakes area is contoured, it is seeded with grass, shrub, and legume based on the final reclamation plan.

Sand tailing reclamation involves pumping the sand tailings into the previously mined areas and covering with overburden. Lands reclaimed in this manner can be reused in a variety of ways from agriculture to industrial and commercial development.

Clay settling ponds are left undisturbed until a crust appears on the surface; then additional trenching is performed to enhance dewatering. Even with dewatering the ponds retain about 20 percent water. Sand tailings may be placed in the ponds to increase the load capability of the land for heavy equipment. The application of sand also increases the settling characteristics of the pond by increasing the percent of solids, thus causing greater consolidation of the clays.

Overburden fill has long been in use in the phosphate industry. It is the placement of the overburden in the previously-mined trench. It can be recontoured easily and is recommended where load bearing strength is required, such as near roadways and railroads. A limitation of the overburden fill technique is the lack of overburden material.

In general, all of these methods are applied to mined land. Today's reclamation often involves a combination of the methods to achieve the best

reclamation. There are often specific requirements to mitigate environmental impacts through restoration of wetlands or other habitats.

The gypsum formed in the chemical process is problematical. According to the Tampa Bay Regional Planning Council, the byproduct gypsum (phosphogypsum) contains a number of heavy metals: arsenic, cadmium, chromium, lead, magnesium, and iron. The gypsum also contains phosphorus, fluorine, and radionuclides. In 1989, the FLDER reported that water seeping through gypsum stacks was contaminating the aquifer that provides water for 90 percent of the State's population. In 1988, runoff from a Hillsborough stack killed thousands of fish. Best Management Practices/Best Available Control Technology construction requirements for handling gypsum include liners, slurry walls, and perimeter drains. To meet these requirements the gypsum stack created by a chemical plant would require a large area; a gypsum stack covering 380 acres would require a total of 600 acres. New stacks are sited in areas underlain with clay, and a plastic liner is installed to prevent ground water contamination (USBM 1992: 130). Runoff from the gypsum stack is collected and recycled. Long-term groundwater monitoring is required and must continue for 50 years. In 1990, Gardinier, Inc. began a $5 million project to cover its Hillsborough County gypsum stack and restore former marshlands (USBM 1992: 130).

Research into environmentally-safe uses for the gypsum was being conducted by the Florida Institute of Phosphate Research. The institute is monitoring two county roads constructed by the institute using phosphogypsum.

The mining process disturbs and redistributes the uranium found in the phosphate. Waste clays seem to have the highest uranium, but some is found in the gypsum pile also. In some chemical plants, the uranium is removed from the phosphoric acid and refined to "yellow cake" a concentrate of uranium (U_3O_8). The yellow cake is shipped off-site for processing into fuel. The uranium tends to settle to the bottom in the clay waste ponds and, potentially, could be taken up by pond vegetation. (TBRPC 1992: 14.7 and 14.23).

Limestone

Standard Management of Salable Limestone

Federal regulations for disposal of mineral materials, including salable limestone, are found at 43 CFR 3600. Under these regulations mineral material sale contracts and free use permits may be issued. Free use permits, however, may be issued only to federal, state or local government agencies.

Prior to issuing a lease, the requirements of NEPA must be met. This normally consists of preparing an EA to determine if significant environmental impacts would result, in which case, an EIS must be prepared. Prior to mining activity, mining and reclamation plans must be approved. Reclamation is required to meet the standards of BLM Handbook H-3041-1, Solid Mineral Reclamation Handbook. In many cases, the federal minerals will be developed in conjunction with private minerals. Where this is the case, the mining and reclamation plans, prepared to meet rules of state and local governments, are acceptable in satisfying the federal requirements, to the extent that they do not conflict with and are at least as restrictive as the federal rules. At a minimum, the BLM must prepare an EA, prepare any stipulations needed, and approve mining and reclamation plans.

The Rules of the FLDNR, Division of Resource Management, Chapter 16C-36 for limestone, effective July 16, 1987 and Chapter 16C-39 for other solid resources, effective January 13, 1989, dictate the reclamation requirements for non-federal salable mineral operations. Permitting varies by county, but in general the following permits are required: Dredge and fill from the FLDEP; Mining/reclamation from the county/city; Works of District from the Water Management District; and, Application for Development Approval and the Development Order from the

Department of Community Affairs. In some cases, salable mineral operations are exempt from state and/or local requirements; the federal requirements for environmental analyses, mine plan approval, resource protection, bonding and reclamation will be applied in every case.

The FLDNR requires the submission of a conceptual mining plan that includes mine and reclamation sequencing for the life of the mine. The FLDNR rules closely follow the requirements of the federal standards.

Evaluation of Limestone Potential

The limestone potential of federal minerals in Florida was determined using the various publications of the Florida Bureau of Geology. Principally used was "The Limestone, Dolomite, and Coquina Resources of Florida," 1979, Map 3. Only those mineral reservations classified as "All Minerals" were included in the limestone potential determination. Limestone potential areas are illustrated in Map 5.

Reasonably Foreseeable Development

The analysis of the data indicates one tract that will probably be subject to exploration and development within the foreseeable future. The tract will be approximately 160 acres located within a high limestone potential area in the Withlacoochee State Forest in Citrus and/or Hernando Counties. The tract could be developed from an existing operation in the area.

Exploration would consist of drilling holes 100 feet deep or less on a 330-foot grid pattern. For mining, a 40- to 60-foot wide haul road about 1.5 miles in length would be constructed. The development of the tract would be as shown in the hypothetical quarry below.

The following hypothetical limestone quarry is based on the annual state production divided by the number of quarries in the state:

a. 74 million tons per year
b. 130 quarries
c. 0.6 million tons per quarry
d. 25 feet mining depth (assumed)
e. 5 feet overburden (saved for reclamation)
f. 20 feet of rock and clay
g. 0.74 million cubic yards needed at 2.2 tons per yard and 37 percent recovery
h. 459 acre-feet of material
i. 23 acres at 20 feet per year
j. 0.47 million cubic yards waste
k. 25 acres required for waste rock and water storage at 20 feet depth
l. 48 acres per year total
m. 1,440 acres for 30-year mine
n. 120 acres for roads and plant
o. 1,560 acres for project
   1,400 acres private
   160 acres federal (10 percent)

Mining Procedure

The limestone premining process is similar to that for phosphate mining, described earlier in this appendix. In many cases, the mine will be operational when federal mining rights are sought. The applicant will probably have drilled adjacent to the federal limestone and may or may not seek an exploration license. The company will probably hold valid permits and approved plans, needing only modifications to include the federal interests. Because the quality standards for stone are very narrow, closely spaced drill holes may be needed prior to or during development, to avoid unacceptable rock.

Prior to mining, the land is cleared, and the vegetation is piled and burned. The stone is drilled, and then charges set and blasted to break the stone for hauling. As the mining progresses, a high wall is created, in this hypothetical case 25 feet.

The broken stone is loaded into trucks and hauled to the plant. Some boulders may be too large and left at the pit. At the plant, the stone is sent through a series of screenings and crushing to achieve a salable product. The fine material, clays and finely crushed stone, are sent to the

waste rock pond for decanting of the water for recycling. The washed and graded crushed stone is sent to storage for later shipment.

The limestone mill requires water for washing the rock, wet screening, and moving the waste clay and rock to the disposal pond. The water is decanted from the waste and returned to the system. An environmental hazard from the wet rock crushing operation is the possibility of a sediment spill from the waste pond.

Best Management Practices

Operations on federal minerals will comply with all federal, state, and local laws, regulations, and ordinances.

The FLPMA mandates that mineral operations be conducted in an environmentally sound manner. The FLPMA requires that "the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values."

Measures needed to mitigate environmental impacts are identified during the preparation of an EA prior to approval of mining and reclamation plans. Water pollution must be prevented through adequate design and maintenance of settling ponds. The pond must be designed to handle rainwater runoff in addition to the mine process water, and the pond dam must be permitted. Dust may be reduced with water sprays on haul roads. Sensitive resources, such as archaeological sites and significant wildlife habitats, may be avoided by relocating operations.

Mitigation of long-term impacts requires restoration and/or reclamation of mined land. Prior to mining activity, mining and reclamation plans must be approved. Reclamation is required to meet the standards of BLM Handbook H-3041-1, Solid Mineral Reclamation Handbook. In many cases, the federal minerals will be developed in conjunction with private minerals. Where this is the case, the mining and reclamation plans, prepared to meet rules of the state and local governments, are acceptable in satisfying the federal requirements, to the extent that they do not conflict with and meet the requirements of the federal rules.

As the overburden is removed during mining operations, the top soil may be saved for later use in reclamation. The overburden is either stored or cast directly into a previously mined pit, for reclamation.

As the mining progresses, oversize boulders (as required by the FLDNR) are placed against the existing highwall covered with overburden, contoured to a 1 foot vertical to 4 feet horizontal slope, and revegetated according to the reclamation plan.

Some of the methods for phosphate reclamation as described by Hale (1982), such as reclamation of settling ponds, are applicable to limestone mining operations.

Reclamation often involves a combination of the methods to achieve the best reclamation. There are often specific requirements to mitigate environmental impacts through restoration of wetlands or other habitats.

Proposed Solid Mineral Development Constraints

The constraints listed below will be implemented as prescribed in the approved RMP. The constraints will apply to management of future phosphate leasing and limestone sales. If the resources protected by the constraints are found on SMA lands, the same stipulation(s), or similar stipulation(s) developed by the SMA, will be applied.

Bald eagle

Constraint: No mining operations will be permitted within a 1,500-foot buffer (primary zone) around bald eagle nests and communal roosting sites and no mining operations will be permitted within the secondary zone, which encompasses the

area within a mile of the primary zone around bald eagle nest sites.

Objective: To avoid impacting nesting eagles and to provide protection for important nesting and foraging habitat.

Exceptions: This constraint will not apply if no nest site can be identified or if the applicant can document that the nest has not been active for five years. An exception may be allowed if impacts are offset by a compensation program which has been developed in coordination with the USFWS, and the FGFWFC and/or other state agencies.

Choctawhatchee beach mouse and Perdido Key beach mouse

Constraint: No mining operations will be permitted within Choctawhatchee beach mouse or Perdido Key beach mouse federally designated critical habitat.

Objective: To avoid impacts to Choctawhatchee beach mouse and Perdido Key beach mouse.

Exceptions: None

Coastal strand

Constraint: No mining operations will be permitted in coastal strand habitats.

Objective: To protect this sensitive plant community and the wildlife and plant species associated with it.

Exceptions: An exception may be allowed if impacts are offset by a compensation program which has been developed in coordination with the USFWS, and the FGFWFC and/or other state agencies.

Florida scrub habitats and associated sensitive species

Constraint: No mining operations will be permitted in Florida scrub habitats (including sand pine scrub and xeric oak scrub).

Objective: To protect rapidly disappearing scrub habitats. These habitats are endemic to Florida and support several federally and state-listed species, as well as several candidates for federal listing and species of concern in Florida.

Exceptions: This constraint will not apply if scrub habitats are found not to exist on the tract. An exception may be allowed if impacts are offset by a compensation program which has been developed in coordination with the USFWS, and the FGFWFC and/or other state agencies.

Gopher tortoise, gopher frog, sand skink, mole skink and other gopher tortoise commensals

Constraint: Prior to tracts with the following habitats being leased or sold, BLM will conduct an inventory for gopher tortoise and commensal species.

Coastal Strand
Pinelands
Sand Pine Scrub
Sandhill
Mixed Hardwood Pine Forests
Xeric Oak Scrub

Areas with densities higher than 0.8 tortoises per acre will not be offered for lease or sale. In areas where densities are lower than 0.8 per acre, relocation and avoidance will be utilized to mitigate the impacts to tortoise.

Exceptions: An exception may be allowed if impacts are offset by a compensation program which has been developed in coordination with the USFWS, and the FGFWFC and/or other state agencies.

Red-cockaded woodpecker

Constraint: No mining operations will be permitted within one-half mile of a red-cockaded woodpecker cluster, defined as all cavity trees within a 1,500-foot circle.

Objective: To protect red-cockaded woodpecker nest sites from disturbance and habitat degradation.

Exceptions: Mining operations may be permitted up to within 200 feet of the cluster if the project can be completed without removing trees over 30 years old, and the action will not reduce the available forage below the threshold established by the USFWS. An exception may be allowed if no active colonies can be found, or if impacts are offset by a compensation program which has been developed in coordination with the USFWS, and the FGFWFC and/or other state agencies.

Sandhills

Constraint: No mining operations will be permitted in sandhills.

Objective: To protect this sensitive plant community and the wildlife and plant species associated with it.

Exceptions: An exception may be allowed if impacts are offset by a compensation program which has been developed in coordination with the USFWS, and the FGFWFC and/or other State agencies.

Tropical hardwood hammock

Constraint: No mining operations will be permitted in tropical hardwood hammocks.

Objective: To protect this rare plant community and the sensitive wildlife and plant species associated with it.

Exceptions: An exception may be allowed if impacts are offset by a compensation program which has been developed in coordination with the USFWS, and the FGFWFC and/or other State agencies.

Wading bird rookeries

Constraint: No mining operations will be permitted within 900 feet of wading bird rookeries during the breeding season (February through August) and within 375 feet during the non-breeding season.

Objective: To reduce impacts to nesting wading birds and protect water quality of adjacent foraging areas.

Exceptions: An exception may be allowed if impacts are offset by a compensation program which has been developed in coordination with the USFWS, and the FGFWFC and/or other state agencies.

Wetlands, aquatic habitats and the associated sensitive species

Constraint: No mining operations will be allowed within 550 feet of an area identified as a wetland. The vegetation or hydrology of a wetland area will not be altered in any way or by any means.

Objective: To minimize the loss, destruction or degradation of wetlands, to preserve and enhance the natural and beneficial value of wetlands areas, to meet the national direction of "no net loss" of wetlands, and to prevent adverse impacts to federally listed plant and animal species and other sensitive species supported by wetland and aquatic habitats.

Exceptions: This constraint will not apply if wetlands are not found on the tract or within 550 feet of the tract.

Use of existing roads which does not require modification or improvement is excepted.

The authorized officer may grant an exception for operations within the 550-foot buffer zone (outside of the area identified as a wetland) if it is determined that the proposed use would not cause adverse impacts to federally listed or other sensitive species.

An exception may be granted to allow mining operations in the wetland area if measures can be taken to either prevent or offset adverse impacts to the wetland area, and a plan to do so through

compensating and/or enhancing or restoring wetlands has been approved by the authorized officer after coordination with one or more of the following agencies: USFWS, USSCS, COE, and state agencies. Compensatory wetlands may be established off-site, as part of a coordinated reclamation plan. All wetlands will be restored acre for acre and type for type on all lands leased for phosphate.

Wood stork

Constraint: No mining operations will be permitted within 2,500 feet of a wood stork colony nest site during the nesting season or within 1,500 feet during the non-nesting season. No mining operations will be permitted within 1,000 feet of identified roosting sites year-round.

Objective: To reduce impacts to nesting wood storks and to protect water quality of adjacent foraging areas.

Exception: An exception may be allowed if impacts are offset by a compensation program which has been developed in coordination with the USFWS, and the FGFWFC and/or other state agencies.

Waiver: This constraint will not apply if no evidence of wood stork nesting or roosting is found on or within 2,500 feet of the tract.